

AMENDMENT TO THE CLAIMS:

This listing of claims will replace all prior versions of claims in the application:

LISTING OF CLAIMS:

1. (ORIGINAL) A system for directly measuring a magnetostriction value of a magnetoresistive element, the system comprising:
 - a fixture for receiving a substrate carrying one or more magnetoresistive elements;
 - a magnet assembly for applying a first magnetic field parallel to the substrate, and for applying a magnetic alternating field perpendicular to the substrate and parallel to magnetoresistive layers of the elements;
 - a mechanism for applying a mechanical stress to the substrate, the stress being oriented parallel to the substrate; and
 - a measuring subsystem for measuring a signal from at least one of the magnetoresistive elements.
2. (ORIGINAL) A system according to claim 1, wherein the substrate is a row or a wafer.
3. (ORIGINAL) A system according to claim 2, wherein the row or wafer carries a plurality of the magnetoresistive elements.
4. (ORIGINAL) A system according to claim 1, wherein the first magnetic field is a DC field.

5. (ORIGINAL) A system according to claim 1, wherein the measuring subsystem is locked to a frequency of the alternating field.
6. (ORIGINAL) A system according to claim 1, wherein the signal from the at least one of the magnetoresistive elements is measured before the mechanical stress is applied; wherein, after applying the mechanical stress, the first magnetic field is changed until the signal being measured co-currently thereto about matches the signal measured before applying the mechanical stress.
7. (ORIGINAL) A system according to claim 1, wherein the mechanism for applying the mechanical stress causes the substrate to bend.
8. (ORIGINAL) A system according to claim 7, wherein the mechanism for applying the mechanical stress is a micrometer screw.
9. (ORIGINAL) A system according to claim 8, wherein the micrometer screw is electronically controlled.
10. (ORIGINAL) A system according to claim 1, wherein the mechanism for applying the mechanical stress is a heat source.

11. (ORIGINAL) A system according to claim 1, wherein the mechanism for applying the mechanical stress is a piezo layer.
12. (ORIGINAL) A system according to claim 1, further comprising a controller for changing the first magnetic field.
13. (ORIGINAL) A system according to claim 12, further comprising a computing device for calculating a magnetostriction constant of the at least one magnetoresistive element based in part on a change of mechanical stress anisotropy due to application of the mechanical stress and the change in the first magnetic field.
14. (ORIGINAL) A system according to claim 1, wherein the at least one magnetoresistive element includes shielding layers, wherein the first magnetic field is calibrated to reflect an influence of a demagnetizing effect of the shielding layers on the element.
15. (ORIGINAL) A system according to claim 1, wherein the magnetoresistive element is an Anisotropic Magnetoresistance (AMR)-, Giant Magnetoresistance (GMR)- or Tunneling Magnetoresistance (TMR)-based sensor.
16. (ORIGINAL) A system according to claim 1, wherein the magnetoresistive elements are magnetic memory elements.

17. (ORIGINAL) A system for directly measuring a magnetostriction value of a magnetoresistive element, the system comprising:
- a bending fixture for receiving a substrate carrying one or more magnetoresistive elements;
 - a magnet assembly for applying a magnetic direct current (DC) field parallel to the substrate, and for applying a magnetic alternating field perpendicular to the substrate and parallel to magnetoresistive layers of the elements;
 - a mechanism for applying a mechanical stress to the substrate by bending the substrate, the stress being oriented parallel to the substrate;
 - a control circuit for changing the DC magnetic field; and
 - a measuring subsystem for measuring a signal from at least one of the magnetoresistive elements prior to application of the mechanical stress, after application of the mechanical stress, and during a time period when the DC magnetic field is changed.
18. (ORIGINAL) A system for directly measuring a magnetostriction value of a magnetoresistive element, the system comprising:
- a bending fixture for receiving a substrate carrying one or more magnetoresistive elements;
 - a magnet assembly for applying a magnetic direct current (DC) field parallel to the substrate, and for applying a magnetic alternating field

perpendicular to the substrate and parallel to
magnetoresistive layers of the elements;
a DC power supply for providing power to the magnet
assembly;
an alternating current (AC) power supply for providing
power to the magnet assembly;
a mechanism for applying a mechanical stress to the
substrate by bending the substrate, the stress
being oriented parallel to the substrate;
a measuring subsystem for measuring a signal from at
least one of the magnetoresistive elements prior
to application of the mechanical stress, after
application of the mechanical stress, and during
a time period when the DC magnetic field is
changed;
a control circuit for changing the DC magnetic field
until the signal currently being measured by the
measuring subsystem about matches a signal
measured before applying the mechanical stress;
and
a computing device for calculating a magnetostriction
constant of the at least one magnetoresistive
element based in part on a change of mechanical
stress anisotropy due to application of the
mechanical stress and the change in the DC
magnetic field.

19. (ORIGINAL) A method for directly measuring a
magnetostriction value of a magnetoresistive element,
the method comprising:

providing a substrate carrying one or more
magnetoresistive elements;
placing the substrate on a fixture;
applying a first magnetic field parallel to the
substrate;
applying a magnetic alternating field perpendicular to
the substrate and parallel to magnetoresistive
layers of the elements;
measuring a signal from the element;
applying a mechanical stress to the substrate, the
stress being oriented parallel to the substrate;
and
changing the first magnetic field until the signal
currently being measured about matches a signal
measured before applying the mechanical stress.

20. (ORIGINAL) A method according to claim 19, wherein the substrate is a row or a wafer.
21. (ORIGINAL) A method according to claim 20, wherein the row or wafer carries a plurality of the magnetoresistive elements.
22. (CURRENTLY AMENDED) A ~~system~~ method according to claim 19, wherein the mechanical stress causes the substrate to bend.
23. (ORIGINAL) A method according to claim 22, wherein the mechanical stress is applied by a micrometer screw.

24. (ORIGINAL) A method according to claim 19, wherein the magnetoresistive element is an Anisotropic Magnetoresistance (AMR)-, Giant Magnetoresistance (GMR)- or Tunneling Magnetoresistance (TMR)-based sensor.
25. (ORIGINAL) A method for directly measuring a magnetostriction value of a magnetoresistive element, the method comprising:
providing a substrate carrying one or more magnetoresistive elements;
placing the substrate on a bending fixture;
applying a magnetic DC field parallel to the substrate;
applying a magnetic alternating field perpendicular to the substrate and parallel to magnetoresistive layers of the elements;
measuring a signal from at least one element;
applying a mechanical stress to the substrate by bending the substrate, the stress being oriented parallel to the substrate;
changing the magnetic DC field until the signal currently being measured about matches a signal measured before applying the mechanical stress;
and
calculating a magnetostriction value of the element.